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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/079,468

02/19/2002

Christopher M. Fender

399483

6678

30955

7590

10/18/2006

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EXAMINER

WHALEY, PABLO S

ART UNIT

PAPER NUMBER

1631

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/079,468	FENDER ET AL.	
	Examiner	Art Unit	
	Pablo Whaley	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/25/2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 8-34 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 and 21-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-13 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

CLAIMS UNDER EXAMINATION

Claims herein under examination are claims 1-4, 8-13, and 20. Claims 5-7 have been cancelled. Claims 14-19 and 21-34 are again withdrawn.

Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

This application contains claims 14-19 and 21-34 drawn to an invention nonelected with traverse in Paper No. filed 10/29/04. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

CLAIM REJECTIONS - 35 USC § 112, 2nd Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "corresponding spectra being derived from spectra." It is unclear in what way said corresponding spectra is "derived" from spectra. Clarification is

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requested. Claims 2-4 are rejected as they depend from claim 1. This rejection is necessitated by amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The Examiner wishes to thank the applicant for pointing out that the Qiu et al. reference in the previous Office Action cited the incorrect journal. The applicant was correct in assuming that the instant Qiu et al. rejection, while incorrectly cited, was based on Qiu et al. *Theor. Appl. Genet.*, 1999, Vol. 98, p.356-364 as discussed in the previous Office Action mailed 06/17/2005. As applicant's arguments are directed to the appropriate Qiu et al. reference, the following rejections are reiterated with the correctly cited Qiu et al. reference. The Examiner sincerely apologizes for failing to make this distinction in the previous office action, and for any inconvenience this has caused the applicant.

Claims 1-4, 10-13, and 20 are rejected under 35 U.S.C. 103(a) as being obvious by Qiu et al. (Theor. Appl. Genet., 1999, Vol. 98, p.356-364), in view of Malins et al. (US Pat. No. 6,214,550; Filed: June 25, 1998).

Applicant's arguments, in the response filed 7/25/2006, that (i) Qiu et al. do not teach "spectral correlation to confirm nematode resistance", and (ii) that Malins et al. do not teach anything relevant to the comparison of spectra with a predictive model for SCN resistance are noted. In response to (i), it is noted that Qiu et al. was not relied on as a teaching for spectral correlation to confirm nematode resistance, but as a teaching for obtaining NIR spectroscopy scans of soybean samples for use in statistical analysis [p.358, Col. 1, ¶ 1 and 2], as recited in instant claim 1, step (a). Furthermore, Qiu et al. was relied upon as a teaching for mean and standard deviations of SCN scores (i.e. mathematical transformations of data) [Table 1], which equates to instant claim 12(b) as set forth in the previous office action mailed 06/17/2005. Qiu et al. also teach SAS and MAPMAKER software (i.e. computer code) for transformation of data, as in instant claim 20, and as set forth in the Office Action mailed 6/17/2005. Therefore, the examiner maintains that Li et al. do, in fact, teach these aspects of the claimed invention for the reasons set forth above and in the previous office actions. The Examiner maintains that all limitations of the rejected claims are described or suggested in the cited references, as the applicant has not pointed out any other specific limitations to indicate otherwise.

In response to (ii), Malin et al. was not relied upon as a teaching for "comparison of spectra with a predictive model for SCN resistance." However, the Examiner maintains that Malins et al. indeed teach methods of screening for a tumor based on characterization of DNA by spectral

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analysis (Abstract), as set forth in the previous office action. More specifically, Malins et al. explicitly teach the following:

- Obtaining and analyzing IR spectral data and determining PC scores [Background of the Invention (17)].
- Comparing peak intensities of spectral data with a predictive model that is based upon regression analysis and PC scores (i.e. spectral data) [Detailed Description of the Invention (24)]
- Comparison of assay and corresponding spectra over predetermined IR frequency ranges [Figs. 2A-1, 2A-2, 3A, and 9].

As the Examiner maintains that Qiu et al. teach the limitations of claims 1-4, 10-13, and 20 as set forth in the previous two office actions and maintained above, he also maintains that it would have been obvious to someone of ordinary skill in the art at the time of the instant invention to use the soybean NIR data taught by Qiu et al. with the multivariate spectral discriminant analysis model of Malins et al., where the motivation would have been to discriminate between alterations in DNA based on IR spectral analysis [Malins et al., Applications of FT-IR Technology (55)] to increase efficiency of soybean breeding programs. Further motivation is provided by Qiu et al., who suggest associations between DNA markers and SCN resistance using transformed data and scans [p.360, Col. 1, ¶ 1 and Fig. 3]. One skilled in the art would reasonably have expected success in combining Qiu et al. and Malins et al. because both teach discriminant analysis of IR spectral data.

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Claims 1-4, 8-13, and 20 are rejected under 35 U.S.C. 103(a) as being obvious by Qiu et al. (Theor. Appl. Genet., 1999, Vol. 98, p.356-364), in view of Borggaard et al. (Anal. Chem. 1992, 64:545-551).

Applicant's arguments, in the response filed 7/25/2006, that (i) Qiu et al. do not teach "spectral correlation to confirm nematode resistance", and (ii) that Borggaard et al. do not teach anything relevant to the comparison of spectra with a predictive model for SCN resistance are noted. As applicant's arguments are identical to the one's set forth above, the Examiner's response to (i) is reiterated from above.

In response to (ii), Borggaard et al. was not relied upon as a teaching for "comparison of spectra with a predictive model for SCN resistance." Therefore, the Examiner maintains that Borggaard et al. teach the use of neural networks for optimally interpreting NIR spectra to classifying samples (Abstract and p. 546, Section I), as set forth in the previous office action mailed 02/28/2006. Borggaard et al. teach the development a predictive model comprising training and monitoring sets [p.546, Col. 2, ¶ 5]. Borggaard et al. also teach applying Borggaard et al. also teach the transformation of data [p.546, Col. 2, ¶ 3], and the acquisition of NIR spectral data for test sets, monitoring sets, and calibration sets over a predetermined frequency range [p.547, Col. 2, ¶ 1], as in amended claims 1 and 12. More specifically, said neural networks are used to compare results and predict fat in homogenized meat products using NIR spectral data [Table II] and [Fig. 6]. The Examiner maintains that all limitations of the rejected claims are described or suggested in the cited references, as the applicant has not pointed out any other specific limitations to indicate otherwise.

As the Examiner maintains that Qiu et al. teach the limitations of claims 1-4, 8-13, and 20, as set forth in the previous two office actions and maintained above, he also maintains that it

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would have been obvious to someone of ordinary skill in the art at the time of the instant invention to use the soybean NIR data taught by Qui et al. with the neural network model of Borggaard et al., where the motivation would have been to use neural networks for making quantitative predictions of soybean NIR spectral data [Borggaard et al., p.550, Section VIII] resulting in an improved method for predicting of SCN resistance. Further motivation to combine said references is provided by Borggaard et al., who disclose the use of NIR spectral data sets with corresponding water, fat, and protein contents [p. 546, Col. 1, lines 10-15]. Qiu et al. teaches soybean seed protein data sets and NIR spectral data analysis, as set forth above. One skilled in the art would reasonably have expected success in combining Qiu et al. and Borggaard et al. because both teach spectral analysis of NIR data.

CONCLUSION

No Claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

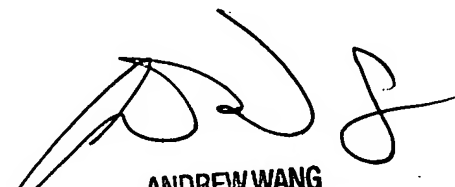
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Whaley whose telephone number is (571)272-4425. The examiner can normally be reached on 9:30am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached at 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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